

EXHIBIT 4

Expert Report of Jay L. Brigham, Ph.D.

**In the United States District Court
for the Eastern District of North Carolina
Southern Division**

Case No.: 7:23-CV-897

Camp Lejeune Water Litigation

Prepared by


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I. Introduction and Opinions

I have prepared this expert witness report at the request of the Environmental Torts Litigation Section of the Civil Division of the United States Department of Justice. As I noted in my “Phase I” expert witness report dated December 9, 2024, the Department of Justice first contacted me in March 2024 regarding this case. Morgan, Angel, Brigham and Associates, LLC, (Morgan Angel Brigham) and I, as the expert witness, signed a contract with the Department of Justice to review historical documents and write an expert witness report examining historical issues pertinent to the distribution of water to the areas of Marine Corps Base Camp Lejeune (MCBCL or Camp Lejeune), relevant to the current litigation, during the Camp Lejeune Justice Act (CLJA) “Statutory Period,” from August 1953 to December 1987.

Based on my review of Dr. Longley’s “Phase II” expert witness report of December 7, 2024, I offer the following opinions. I may revise or supplement my opinions as the litigation progresses or should new information be made available to me.

1. Toward the end of his report, in “XIX. Appendix 1: Research Methodology,” Dr. Longley discusses the methodological approach he used when conducting research for his report. I take issue with Dr. Longley’s application of the methodology he outlines, given his portrayal, description, and account of facts and events throughout his narrative, and his use and citation of sources. In short, Dr. Longley does not consistently follow the accepted practices that historians use in writing narratives and expressing their findings. Notably, in numerous places, Dr. Longley fails to provide citations for his assertions at all. In other places, he fails to provide corroborating documentation for some of his assertions. Additionally, he extrapolates from a single document representing a snapshot in time to characterize an event or experiences over time at Camp Lejeune. Furthermore, in at least three instances, Dr. Longley entirely and egregiously misrepresents his source material.
2. Dr. Longley’s six findings in his expert report dated December 7, 2024, are broad generalizations, written to encompass the entirety of Marine Corps Base Camp Lejeune. By his own admission, however, he only examines the Hadnot Point and Tarawa Terrace areas. Although Hadnot Point is the center of many activities at Camp Lejeune, there are other areas of the base where important activities occur, and Marines lived and worked and otherwise spent time on these other areas of the base.
3. More specifically, and of concern, Dr. Longley’s findings 4, 5, and 6 examine water usage only at Hadnot Point and Tarawa Terrace. Although Dr. Longley discusses the Holcomb Boulevard area of Hadnot Point, he fails to mention that the Holcomb Boulevard Water Treatment Plant (WTP) went online in 1972 and only occasionally pumped contaminated water to its service area for the remainder of the statutory period. As I note in my December 9, 2024,

report, there were several Camp Lejeune WTPs that serviced areas that are referred to as “Non-Contaminated Areas” of the base, because the ATSDR did not conclude, and Plaintiffs do not allege that WTPs serving those areas were ever contaminated. Dr. Longley does not dispute this. These areas are: Montford Point / Camp Johnson, Camp Geiger, Marine Corps Air Station New River (MCAS New River), Rifle Range at Stone Bay, Onslow Beach, and Courthouse Bay. For most of the statutory period, each of these areas had its own WTP that serviced it, or in the case of two such Non-Contaminated Areas were serviced by the same WTP (Camp Geiger and MCAS New River after 1976). In the second sentence of finding 6, Dr. Longley describes Marines and their families’ activities of daily living including attending school, swimming in pools, and socializing at clubs; yet he does not take into consideration that when Marines and their families engaged in these activities away from Hadnot Point or Tarawa Terrace, they were not exposed to contaminated water. Similarly, in finding 5, in which Dr. Longley notes that Marines were exposed to much water when they lived in barracks and worked in “motor pools and mechanic buildings, and scullery and mess hall facilities,” he does not account for the fact that Marines who lived and worked in the Non-Contaminated Areas were not exposed where they lived, while eating or working in mess halls, or while working at the motor pool. Nor were Marines and their families exposed to contaminated water in the Holcomb Boulevard service area after its WTP went online in 1972, except when the Hadnot Point WTP occasionally furnished water to the Holcomb Boulevard area.

4. Dr. Longley does not adequately address the fact that some Marines and their families lived in off-base housing that did not receive water from on-base water treatment plants. Likewise, he does not address that Marines and Marines’ family members could go off-base for social and recreational purposes. Jacksonville business establishments and real estate companies advertised in the Camp Lejeune base guides and, beginning in the 1980s, *The Globe*, suggesting that the business owners considered Camp Lejeune Marines as potential customers.

5. The portion of Dr. Longley’s finding 6 discussing water buffaloes does not take into consideration the likelihood that water buffaloes were, at times, filled with non-contaminated water away from Hadnot Point. In fact, although Dr. Longley, in other parts of his report, cites certain portions of General Anthony Zinni’s deposition of May 28, 2024, he fails to cite the part of General Zinni’s testimony that notes there was a water buffalo filling station at Camp Geiger. And although Dr. Longley cites Plaintiff Gary McElhiney, Sr.’s deposition in his report, he does not reference Mr. McElhiney’s statement that a water filling station was located at Courthouse Bay. Similarly, when Dr. Longley selectively cites Plaintiff Benjamin Urquhart’s deposition, he fails to include Mr. Urquhart’s testimony that there were water buffalo filling stations in numerous locations on base.

6. Dr. Longley mischaracterizes the modes of transportation at Camp Lejeune, most notably regarding the use of privately-owned vehicles. As discussed in this report, at various times

during the statutory period, the number of privately-owned cars at Camp Lejeune exceeded 20,000.

II. Objectives and Methodology

During my first discussions with the DOJ in March 2024 and after signing a contract to work on this project, the DOJ asked me to write a base-wide history “examining historical issues pertinent to the distribution of water to the areas of Camp Lejeune relevant to the current litigation, during the CLJA ‘statutory period.’”¹ As part of that work, I was asked to examine the water systems that operated before and during the statutory period, including the areas of the base that each water system served. My examination of the various areas of the base included the housing for troops and families, as well as the recreational opportunities, amenities, and schools operated at MCBCL beyond Hadnot Point and Tarawa Terrace. I was also asked to look for information about water trailers, or water buffaloes, that provided water to Marines during field training activities at Camp Lejeune. I was not asked to undertake a technical analysis of how water buffaloes were filled or how they worked. Finally, the DOJ asked me to look for and examine historical documents concerning the opening of the ABC One-Hour Cleaners.

To provide credence to my first opinion in this report, I describe here the methodology and historical standards I employ in my work. The first thing I did after my retention by the DOJ in March of 2024 was to review secondary sources on the history of the Marine Corps generally and Camp Lejeune specifically. This review included books such as Allan R. Millett, *Semper Fidelis, The History of the United States Marine Corps, Revised and Expanded Edition* (New York: The Free Press, 1980, 1991); USMC, *Semper Fidelis, A Brief History of Onslow County, North Carolina, and Marine Corps Base Camp Lejeune*, (2004); G. Carraway, *Camp Lejeune Leathernecks, Camp Lejeune, N.C., Marine Corps’ Largest All-Purpose Base* (New Bern, N.C.: Owen G. Dunn, 1946); and Alan D. Watson, *Onslow County, A Brief History* (Raleigh, NC: North Carolina Department of Cultural Resources, 1995). As part of this work, I also reviewed books on the Camp Lejeune water contamination that is at the center of the CLJA. Books that I reviewed include: Mike Magner, *A Trust Betrayed, The Untold Story of Camp Lejeune and the Poisoning of Generations of Marines and Their Families* (Philadelphia, PA: Da Capo Press, 2014); Robert O’Dowd, *A Few Good Men, Too Many Chemicals, Toxic Exposure of US Marines and Government Lies* (Odowd Publishing, 2019); and George Swimmer, *Deadly S.N.A.F.U., Marine Corps Base Camp Lejeune, N.C. and Joint Base Pearl Harbor-Hickman, Hawaii* (George Swimmer, 2024).

¹ Expert Report of Jay L. Brigham, Ph.D., In the United States District Court for the Eastern District of North Carolina, Southern Division, Case No.: 7:23-CV-897, Camp Lejeune Water Litigation, December 9, 2024, (Brigham Report, 12/9/2024), 1.

While my review of secondary sources was underway, my staff and I started to review documents on the internet such as Camp Lejeune “History,”² United States Marine Corps History Division, “End Strengths: 1795-2015,³ and reports prepared by the Agency for Toxic Substances and Disease Registry (ATSDR) including ATSDR, “Summary of the Water Contamination Situation at Camp Lejeune,” 11/12/2024;⁴ and M. Maslia, et al., *Reconstructing Historical VOC Concentrations in Drinking Water for Epidemiological Studies at a U.S. Military Base: Summary of Results, Water*, 8, 449 (2016).⁵ I also reviewed Marine Corps publications discussing the Corps’ experience in Vietnam such as J. Shulimson, *U.S. Marines in Vietnam, An Expanding War, 1966* (History and Museum Division, 1982); and G. Dunham and D. Quinlan, *U.S. Marines in Vietnam, The Bitter End* (History and Museum Division, 1990). I provided electronic copies of these reports as part of my reliance documents. I provided a list of the books I reviewed as part of my reliance documents.

I visited Marine Corps Base Camp Lejeune from May 21, 2024, to May 23, 2024. On May 21, 2024, I went to the Harriette B. Smith Library located on Marine Corps Base Camp Lejeune and reviewed material in the stacks on the history of Camp Lejeune and the Marine Corps.⁶ The remaining days, I went on a USMC guided tour of Camp Lejeune. As part of the site tour, we visited Onslow Beach, which gave me an indication of the size of the base east of the New River. We also passed through several training areas, including areas where live-fire training was taking place. On the tour we visited one of the remaining H-style barracks at Hadnot Point, the parade grounds, warehouses and motor pools throughout the base; we also drove by the Hadnot Point and Holcomb Boulevard Water Treatment Plants, and the Camp Lejeune High School. After lunch at one of the former Paradise Point officer clubs, now known as The Club at Paradise Point, we visited the former site of the ABC One-Hour Cleaners, the Tarawa Terrace housing area, and Montford Point / Camp Johnson before exiting the base to cross New River via Highway 17. After a long drive to the western side of the base, we visited Camp Geiger, MCAS New River, and several more training areas. Photographs of the visit, including one of me standing next to a M149A2 water buffalo in a motor pool on MCAS New River, have been

² <https://www.Lejeune.marines.mil/visitors/history.aspx>.

³ <https://www.usmcu.edu/Research/Marine-Corps-History-Division/Research-Tools-Facts-and-Figures/End-Strengths/>.

⁴ <https://www.atsdr.cdc.gov/camp-lejeune/about/summary-of-the-water-contamination-situation.html>.

⁵ CLJA_ATSDR_BOVE_HC_0000004039.

⁶ On June 7, 2024, I participated in a virtual meeting with the head librarian at the Harriette B. Smith Library who showed me and the DOJ several base guides. Later in the summer, one of my staff members returned to Camp Lejeune with the DOJ to image the base guides.

produced under the protective order due to the sensitivity of photographs on military installations.⁷

In late June, I participated in a telephone call with Mr. John Lyles, Chief Archivist of the Marine Corps History center at Quantico, VA, after which my staff collected command chronologies for many of the Marine Units stationed aboard Camp Lejeune. During June and throughout the summer and into the fall, under my direction, my staff visited the National Archives and Records Administration (NARA) in College Park, MD, where they reviewed Marine Corps and Navy records. Staff also visited the NARA facility in the District of Columbia, and I contacted the NARA facility in Ellenwood, GA, to inquire about Marine Corps records. The staff at the Ellenwood facility provided me with information regarding where to locate *The Globe* online. Also under my direction, members of my staff conducted research at the Library of Congress.

In drafting my report, I relied on the documents that I and my staff reviewed and collected as well as documents that the DOJ had acquired as part of the CLJA litigation. When writing expert witness reports, I endeavor to use primary and contemporaneous documents. For example, when I was examining the construction of Camp Lejeune in the early 1940s, I used the three base completion reports issued during that time period. The base completion reports are contemporaneous documents since they were prepared during the time of the base's construction and included a description of the first two water systems built on base at Camp Geiger and on Hadnot Point. Another contemporaneous source that I used was the base weekly newspaper *The Globe*, published by the Marine Corps. *The Globe* provides information on what was occurring at the base. Other contemporaneous sources that I reviewed and used to formulate my opinions included the base telephone directories, extant base guides, and existing conditions maps. I used articles and other information from *The Globe* to support my opinions about the various areas of Camp Lejeune and when Marines and their families used water from contaminated as well as non-contaminated WTPs. I also used local newspapers and materials in my exploration of the origins of the ABC One-Hour Cleaners in Jacksonville.

I do not consider deposition testimony or declarations to be oral histories. The reliance on memory in both must always be taken into consideration. Samuel Redman addressed human memory in his work *Historical Research in Archives: A Practical Guide*, published by the American Historical Association. Redman wrote: "Human memory, however, is both fallible and malleable. Oral histories, should, therefore be read carefully and critically in the light of

⁷ CLJA_PHOTO_0000000004, see also CLJA_PHOTO_0000000001–0000000058.

evidence from other available sources.”⁸ This statement that memory is “fallible and malleable” in the context of oral histories applies to deposition testimony and declarations as well.

Throughout my December 9, 2024, report, I strove to provide citations for the facts I referenced, to use corroborative documentation for the assertions I made, and, to the extent possible, to review sources discussing each area of the base during all decades of the statutory period. By doing so, I provide the readers of the report with a roadmap for understanding how I arrived at my opinions.

III. Narrative Shortcomings of Dr. Longley’s Report: Disregard of the Non-Contaminated Areas; Lack of Citations, Corroborating Evidence, and Extrapolations and Assertions; and Misattributed and Misrepresented Sources

A. Introduction

I find Dr. Longley’s narrative suffers several shortcomings, including a failure to show readers the totality of Camp Lejeune, and methodological issues in the portrayal of the research and findings. First, Dr. Longley has an almost complete disregard for the Non-Contaminated Areas of the base and, as such, his narrative provides an incomplete picture of life at Camp Lejeune during the statutory period. Second, and perhaps more egregious for a professional historian, Dr. Longley’s narrative suffers from a lack of citations or incomplete citations, a lack of corroborating evidence, and a failure to consider changes over time at Camp Lejeune. As a result, Dr. Longley makes several assertions and/or draws inferences that cannot be justified by his documentation. Third, in at least three instances, Dr. Longley provides a complete mischaracterization of his source material. As a result of these shortcomings, I conclude that his findings should be met with less trust and greater uncertainty. Because of these flaws, and the existence of sources that lead me to different conclusions, I respectfully disagree with a number of Dr. Longley’s findings in his report.

⁸ S. Redman, *Historical Research in Archives: A Practical Guide* (American Historical Association, 2013), 58. Redman teaches at the University of Massachusetts, Amherst, <https://www.umass.edu/history/about/directory/samuel-j-redman>. Also see Expert Witness Report of Ari Kelman, Ph.D., February 7, 2025, In the United States District Court for the Eastern District of North Carolina, Southern Division, Case No.: 7:23-CV-897, Camp Lejeune Water Litigation (Kelman Report, 2/7/2025).

B. Dr. Longley's Sole Focus on Hadnot Point and Tarawa Terrace Hinders His Ability to Provide an Accurate Picture of Water Use and Exposure to Contaminated Water on the Base

In the Introduction, on the second page of his report, Dr. Longley lays out the purpose of his report:

The purpose of this report is to provide historical information informed by my expertise that may be of relevance for purposes of understanding the historical use of the Marine Corps Base Camp Lejeune as it related to water consumption and use by those on the base.

I have sought to frame my historical investigation by reviewing facts, documents, and oral testimony and history that can inform the topic of the water use at the base by the Marines and their dependents.⁹

In contrast to his stated purpose, Dr. Longley does not actually examine water use on the totality of the base, nor does he provide an accurate picture of exposure to contaminated water, given that he focused on only two areas of the base. Indeed, he barely mentions—let alone discusses—six of the other seven areas and failed to recognize the effect of the Holcomb Boulevard WTP coming online in 1972. To provide a full picture of water use on the base during the statutory period, Dr. Longley would have needed to examine water sources and water usage at the base beyond Hadnot Point and Tarawa Terrace, including an examination of when the other seven water treatment plants were in operation during the statutory period, an examination which I undertook in my report.¹⁰ His failure to look at the operation dates of the water treatment plants is particularly significant when analyzing exposure to those using the water from the Holcomb Boulevard WTP, which began operating in 1972 and continued for most of the remaining statutory period through 1987. Except for infrequent occurrences, this WTP supplied uncontaminated water to Hadnot Point north of Wallace Creek, referred to in my December 9, 2024, report as the Holcomb Boulevard area, which included the family housing areas of Berkeley Manor, Watkins Village, Midway Park, and other housing such as the officers' quarters

⁹ *In re Camp Lejeune Water Litig.*, Master Case No. 7:23-CV-897 (E.D.N.C.), Expert Report of Dr. Kyle Longley, December 7, 2024 (Longley Report, 12/7/2024), 2.

¹⁰ Brigham Report, 12/9/2024, 23, Table 1 and Section V.C, 56-84.

and barracks at Paradise Point.¹¹ I will discuss this issue in more detail in Section IV of this report.

By way of another example, on page 16 of his report and in “Section XVIII. Recapitulation of Findings,” Dr. Longley uses the phrase “County Seat” to describe Hadnot Point as the area where Marines and their families sought “medical services, food and other goods, entertainment, and cultural experiences, schools, and for many other reasons.”¹² Once, at the end of the report, he describes other areas of the base “such as Tarawa Terrace, Holcomb Boulevard, Camp Johnson / Montford Point” as “neighborhoods” near Hadnot Point, but does not discuss who lived and worked in these neighborhoods. In the footnote to that sentence, he notes that other “important communities and areas on the base included Courthouse Bay (location of Marine Corps engineer schools), Onslow Beach (where recon was historically), New River (where an air station is located), Camp Geiger (site of infantry training), and the Rifle Range area (a functional rifle range with a small but permanent staff).”¹³ Yet what is written in this footnote is the extent of his discussion of Courthouse Bay, Onslow Beach, MCAS New River, Camp Geiger, and the Rifle Range; thus, similar to his discussion in the text, Dr. Longley does not discuss who lived (temporarily or permanently), worked, or trained in these areas. As I discussed in my December 9, 2024, report, most of these areas had the same types of services and other amenities available at Hadnot Point (albeit on a smaller scale), especially Montford Point / Camp Johnson, Camp Geiger, and MCAS New River. Thus, Dr. Longley’s finding that Hadnot Point was the “County Seat” is incomplete. I will discuss these areas in more detail in Section IV of this report.

C. Lack of Citations, Corroborating Evidence, and Extrapolations and Assertions

Dr. Longley’s report is marred at times by incorrect or missing citations to some of the photographs he uses and by a lack of citations and/or corroborating evidence for some of the assertions that he makes. As discussed by Dr. Ari Kelman in his February 7, 2025, report, historians have a methodological responsibility to provide documentation for their assertions. Without citations and corroborating evidence, it is difficult to evaluate some of Dr. Longley’s findings.¹⁴ The American Historical Association (AHA) notes in its “Statement of Standards on Professional Conduct (updated 2023):” “Honoring the historical record also means leaving a

¹¹ Brigham Report, 12/9/2024, 7 and footnote 9.

¹² Longley Report, 12/7/2024, 16, 43.

¹³ Longley Report, 12/7/2024, 43-44 and footnote 123.

¹⁴ Kelman Report, 2/7/2025.

clear trail for subsequent historians to follow.”¹⁵ The AHA continues: “The trail of evidence in bibliographies, notes . . . and other forms of scholarly apparatus is crucial not just for documenting the primary sources on which a work of history depends, but the secondary sources as well.”¹⁶ A lack of citations prevents a work of scholarship from providing “a clear trail” for other historians to follow. The AHA further notes:

Finally, the trail of evidence left by any single work of history becomes a key starting point for subsequent investigations of the same subject, and thus makes a critical contribution to our collective capacity to ask and answer new questions about the past. For all these reasons, historians pride themselves on the accuracy with which they use and document sources. The sloppier their apparatus, the harder it is for other historians to trust their work.¹⁷

Relatedly, Dr. Longley often uses a single citation or document related to a distinct point in time and then broadly extrapolates from the finding, applying it to the entire statutory period. As Professor Zachary M. Schrag writes in *The Princeton Guide to Historical Research*, “history has been defined as ‘the analysis of change over time.’ Accordingly, historians seek sources that document this change.”¹⁸ Relying on a single document might prevent such an analysis. It is inappropriate for Dr. Longley to draw broad conclusions covering decades of time by relying on a single document focused on a specific point in time.

Professor Schrag discusses the importance of providing accurate citations and including corroborative documents when writing history. He first cites historian Richard White who noted the historian’s desire “to tell ‘the truth,’” although the historian usually ends up “providing evidence for what we say so others can check for themselves.”¹⁹ Schrag then writes, “the real standard is not accuracy but replicability, meaning that, as in a laboratory science, ‘a study can

¹⁵ American Historical Association, “Statement on Standards of Professional Conduct (updated 2023),” <https://search.app/BtE9gymqWDvzBEEL6>, pdf page 3.

¹⁶ “American Historical Association, Statement on Standards of Professional Conduct (updated 2023),” <https://search.app/BtE9gymqWDvzBEEL6>, pdf page 3.

¹⁷ “American Historical Association, Statement on Standards of Professional Conduct (updated 2023),” <https://search.app/BtE9gymqWDvzBEEL6>, pdf page 3.

¹⁸ Z. Schrag, *The Princeton Guide to Historical Research*, (Princeton, NJ: Princeton University Press, 2021), (Schrag, *The Princeton Guide*), 221. For “the analysis of change over time,” Schrag cites Social Science Research Council, *The Social Sciences in Historical Study: A Report of the Committee on Historiography*, (New York: Social Science Research Council, 1954), 24.

¹⁹ Schrag, *The Princeton Guide*, 27.

be repeated because a detailed study methods description is available.”²⁰ In the writing of history, this means providing accurate citations and, when possible, including additional corroborating documents to substantiate assertions and findings.

Professor Schrag’s discussion raises the question of when a historian should use citations. In 1989, historian Anthony Brundage wrote, *Going to the Sources, A Guide to Historical Research and Writing* and addressed this issue of when historians should use footnotes.²¹ Brundage included a section on footnoting, asking the question: “Should each ‘fact’ be footnoted?”²² He continued: “The purpose of footnoting is to allow your reader to check on the accuracy of your quotations, citations, and assertions. You should not footnote a major fact that is well known and unchallenged, such as ‘President Lincoln was assassinated by John Wilkes Booth . . .’”²³ Brundage continued that it is not “necessary to footnote most of those smaller facts about events or details of a person’s life that the reader can easily check . . . But when such a fact is being emphasized or used as evidence, and certainly when it is in dispute, it needs to be footnoted.”²⁴

Below I provide eight examples of Dr. Longley’s lack of citations and corroborating evidence to support his findings, as well as his extrapolations and assertions, which, in my opinion, make his findings unreliable and cast doubt on other findings in his report.

1) In Section IV on pages 9-11 of his report, Dr. Longley discusses water usage in the United States in general, and at Camp Lejeune specifically, from 1942 through the 1980s. In this section of seven paragraphs, Dr. Longley cites only four sources: (1) a general reference to all of the ATSDR reports, (2) deposition testimony of one individual Plaintiff, (3) an “oral history” Dr. Longley conducted with this same Plaintiff, and (4) a 1999 Army planning guide. These sources do not substantiate the assertions and summaries in Dr. Longley’s narrative. To illustrate, I note that, in fact, in his first three paragraphs of this section, he fails to provide any citations at all. In these paragraphs he discusses the construction of the base, the use of water on base, and water consumption at the base and “throughout the country” without providing any citations. This

²⁰ Schrag, *The Princeton Guide*, 27. Schrag’s quote is from Rik Peels and Lex Bouter, “The Possibility and Desirability of Replication in the Humanities,” *Palgrave Communications* 4 (2018), 2.

²¹ A. Brundage, *Going to the Sources, A Guide to Historical Research and Writing*, 6th ed., (Hoboken, NJ: John Wiley & Sons, Inc., 2018) (Brundage, *Going to the Sources*). Brundage is professor emeritus at the California State Polytechnic University, <https://anthonybrundage.academia.edu/>.

²² Brundage, *Going to the Sources*, 125.

²³ Brundage, *Going to the Sources*, 125.

²⁴ Brundage, *Going to the Sources*, 125.

leaves the reader without a single source to check for the information he discusses in these paragraphs. In the fourth paragraph, Dr. Longley discusses the Camp Lejeune water supply that started in 1942 in a singular sense. While he notes “new water treatment plants [were] constructed” over the years, he does not elaborate or provide any context, but merely points the reader, with one sweeping citation, to the “voluminous publications of the ATSDR on the subject of the base and its water.”²⁵

2) In the last two paragraphs on page 10, Dr. Longley cites a video deposition of Allan Howard and an “oral history” that he later conducted with Mr. Howard to support his assertion that water usage in the 1950s through the 1980s was different from today. While this might be the case, a more robust discussion, one that included more corroborating sources, would better support this contention rather than a reliance on the oral history of one individual who was at Camp Lejeune for a specific period of time, from roughly 1977 to 1981, and who is a Plaintiff in the litigation.²⁶

This passage also highlights why Dr. Longley’s failure throughout the report to discuss the WTPs and systems other than those at Hadnot Point and Tarawa Terrace limits the credibility of his assertions. I do not doubt that people drank tap water or used water in mixing tea and coffee and other drinks. However, when those activities occurred away from Hadnot Point and Tarawa Terrace I and II, the water most likely would have come from a non-contaminated WTP. Dr. Longley writes in the second to the last paragraph on page 10 that: “There were even hoses across the base to distribute water from the main water supply to stations where Marines could fill up canteens and jugs,” without providing a citation. Given that water is at the center of the Camp Lejeune Justice Act this is a serious omission. In the last paragraph of the section, Dr. Longley discusses a 1999 Army study on water consumption. While water is certainly “crucial to a functioning military operation,” additional documentation from the statutory period is necessary to draw conclusions about what may have occurred decades earlier and would bolster this claim.

3) Throughout Dr. Longley’s report, there are numerous images and pictures that have no citations or incomplete citations. Examples of images and pictures that have no citations can be found on pages 3, 7, 8, 10, 11, 13, 15, 17, 18, 21, 24, 25, 31, 32, 34, and 36 of his report. Some pictures are cited “Courtesy of the U.S. Marine Corps Archives,” but lack additional location information that is needed for a person to view the original pictures. See for example pictures on pages 8, 12, 20, and 26 of Dr. Longley’s report.

²⁵ Longley Report 12/7/2024, 9-11 and footnote 19. As I discuss in my December 9, 2024, report there were nine different water supply systems at Camp Lejeune during the statutory period, Brigham Report, 12/9/2024, 5 and 23.

²⁶ Longley Report, 12/7/2024, 9-10. See also Deposition of Allan Howard, 2/16/2024, 12-15.

4) Section V.b, pages 11-12, “All-Encompassing Nature of the Base,” is comprised of four paragraphs and includes only one citation at the end of the fourth paragraph. In the first paragraph, Dr. Longley states that the size of the base required large numbers of workers, including civilians. In the second paragraph he writes that the Marine Corps provided security to protect base occupants from crimes and had its own security system. In the third paragraph, he discusses the Marine Corps’ desire to keep Marines on base in part to prevent clashes “between sometimes rowdy Marines and locals” as well as to keep entertainment dollars on base.

In the fourth paragraph, Dr. Longley further discusses the Corps’ goal of keeping Marines on base when he references on-base “entertainment, recreation, and socialization” opportunities. In this paragraph, Dr. Longley quotes the author of a 1955 article in the *Leatherneck* magazine.²⁷ While the quote that Dr. Longley uses in his report is the first sentence of the article, there is nothing else in the article to support the rest of his multi-paragraph discussion.²⁸ Thus, the article does not provide support for the broad statements in this section of Dr. Longley’s report. While the article does discuss recreational opportunities at Camp Lejeune in 1955, to establish continued recreational opportunities from subsequent decades, additional documentation is needed to establish the validity of his assertion that this was representative of the entire statutory period.

There is, however, information in this article that supports opinion 2 in my December 9, 2024, report about recreational opportunities at other areas of the base and my opinion 4 in this report that Marines participated in off-base recreational activities. For example, the article’s author noted that: “Service Clubs, nee Slopchutes, dot every area on the station and house snack bars, bowling alleys, pool, card, game and ping-pong tables and branches of the big central library.”²⁹ After mentioning the plush “niteries” at Hadnot Point, the author continued: “Camp Geiger and Montford Point also boast spas for the top three paygraders.”³⁰ Still later the article refers to the 14 theaters on base as well as off-base opportunities in Jacksonville: “if the camp is ‘closed,’ the Camp Lejeune Highway is lighted with the neon facades of the drive-in restaurants.”³¹

²⁷ Longley Report 12/7/2024, 12, footnote 24. Longley incorrectly cites the article title as “Recreation (at Camp Lejeune).”

²⁸ Longley Report 12/7/2024, 11-12, footnote 24.

²⁹ R. Suhosky, “Lejune Recreation,” *Leatherneck*, 4/1955, 27.

³⁰ R. Suhosky, “Lejune Recreation,” *Leatherneck*, 4/1955, 27.

³¹ R. Suhosky, “Lejune Recreation,” *Leatherneck*, 4/1955, 27.

5) In Section V.c of his report, on page 13, Dr. Longley also discusses “The Centrality of Hadnot Point” and to support the information in his first paragraph, he cites—in his footnote 25—to the January 2, 1970, edition of *The Globe*. He does not provide the reader with the name of an article or a page number as a reference point, but a review of the entire edition of the journal shows that there are certainly articles and announcements that discuss activities at Hadnot Point. However, I notice that this issue of *The Globe* also contains, even though Dr. Longley does not acknowledge this in his narrative, several articles and announcements that discuss activities elsewhere on the base, including Non-Contaminated Areas.³² In Dr. Longley’s following paragraph (on page 13), he lists the various activities at Hadnot Point available to Marines and their families, without discussing the activities available elsewhere on base. He also writes that: “For many young Marines, coming from modest economic backgrounds and rural regions, the base offered more amenities than they had experienced in their young lives.” Although this assertion is likely accurate, without a citation the reader cannot independently determine the veracity of the assertion.

6) In Section VI, pages 17-20, Dr. Longley discusses “The Mainside Barracks at Hadnot Point.” Here he discusses water usage and volume in the barracks for personal use, cleaning of weapons, cleaning the barracks and doing laundry. While it is possible that the described activities occurred at the Hadnot Point Barracks that received water from the Hadnot Point Water Treatment Plant, his sources for this discussion include only declarations and deposition transcripts from two Plaintiffs in this litigation who were at Camp Lejeune in the 1970s and an “oral historian statement.” These depositions were taken in 2024, and the declarations were written in 2024, some 40 years after these individuals were at Camp Lejeune. Without additional source material, Dr. Longley cannot make assertions about what transpired at other times during the 34-year statutory period to corroborate his assertions regarding water use.

In support of his claim that “sometimes the showers in the barracks were even left on when no one was in them” (page 19), Dr. Longley cites to what, upon further examination, is an opinion piece from the July 19, 1979, edition of *The Globe*. In this commentary by Russ Thurman, the author, who is writing during the energy crisis of the late 1970s, describes “The

³² *The Globe*, 1/2/1970, Brigham_USA_0000022897. Articles and announcements for activities at Hadnot Point include “Prenatal Classes Will Begin” (page 4), numerous sporting events (pages 8-9), and a “Movie Schedule” and “Activities Calendar” (page 11). Articles and announcements for other areas of Camp Lejeune include an announcement of an auction at the Marine Corps Air Station (page 5), the “Movie Schedule” on page 11 listing movies that will be shown at Courthouse Bay, Rifle Range, Montford Point (indoor and outdoor), Camp Geiger, the Air Station, and Onslow Beach in addition to theaters at Hadnot Point. The “Activities Calendar” includes activities at Camp Geiger and Montford Point as well as Hadnot Point. Also on page 11 is an announcement that the musician George Doerner and his orchestra would be performing five shows at Camp Lejeune including one at the Camp Geiger theater, one at the Montford Point Service Club, and one at the Courthouse Bay Service Club. Two shows would be held at Hadnot Point venues.

American Crisis.” Thurman writes: “And those who live in the barracks are no saints when it comes to wasting energy. If you took the time to walk through any barracks on base, you’d find showers on and lights burning when no one is around.”³³ Given the context, the claim that showers were left on “all of the time” appears to be hyperbole.³⁴

7) In Section VIII, pages 24-28, Dr. Longley examines family housing and activities and references Hadnot Point and Tarawa Terrace. Although many of the daily activities that Dr. Longley discusses in this section of his report likely occurred, he relies mostly on the declaration and deposition of one individual Plaintiff, Ms. Jacqueline Tukes, who testified she resided at Camp Lejeune from June 1985 to July 1985 and December 17, 1985 to January 8, 1987,³⁵ without any corroborating evidence from other sources at different time periods, such as the base guides, newspapers, magazines, or even other depositions.

8) In Section XII, pages 33-36, Dr. Longley discusses what Marines did while in the field. He writes that “approximately twenty percent of the time spent by Marines at Camp Lejeune could involve field training.”³⁶ The source for this quote is a film on maneuvers at Camp Lejeune. I did not find a reference in this film to support Dr. Longley’s statement that “approximately twenty percent” of a Marine’s time was spent doing field training.³⁷ Additionally, Dr. Longley relies exclusively on declarations and depositions, which were taken or written decades after the training, for his discussion of what occurred during such training. As Dr. Kelman discusses, such sources could be biased.³⁸

³³ Longley Report, 12/7/2024, 19. See R. Thurman, *Foxhole Express*, “The American Crisis,” *The Globe*, 7/19/1979, BRIGHAM_USA_0000027244, at *0000027245.

³⁴ The two other sources cited in this section of Dr. Longley’s report discussing the barracks do not discuss water usage in the barracks. Instead, one is from the post-statutory period and discusses Marines’ drinking habits, and the other is a historical reference that notes the size of the barracks. See Longley footnote 43, U.S. Marine Corps Headquarters, “Marine Corps Base Camp Lejeune and Marine Corps Air Station, New River: Water Conservation Analysis” (ECG, INC., 1999), 47, 60; and Longley, 20, footnote 50, Completion Report Covering the Design of Camp Lejeune U. S. Marine Barracks New River, North Carolina for the U.S. Navy Bureau of Yards and Docks Contract NOy [sic] 4751, page 54, April 15, 1941-September 30, 1942, CLJA_USMCGEN_0000287341, at *0000287419.

³⁵ Deposition of Jacqueline Tukes, 4/11/2024, 35-38, 157-58; Deposition of Jacqueline Tukes 1/15/2025, 45-46. Ms. Tukes amended her complaint in August 2024, Deposition of J. Tukes, 1/15/2025, 15. Ms. Tukes testified that she and her family lived at the Hostess House on Hadnot Point for 30 days in the summer of 1985, before moving off base until December 1985, Deposition of J. Tukes, 1/15/2025, 20-21.

³⁶ Longley Report, 12/7/2024, 33.

³⁷ The hyperlink for the video is: <https://digital.tcl.sc.edu/digital/collection/MarineCorps/id/3661/rec/6>.

³⁸ Kelman Report, 2/7/2025.

D. Misattributed and Misrepresented Sources

In Section V.c, pages 13-16, Dr. Longley's lack of citations once again illustrates cause for concern over the accuracy of his narrative. On page 13, Dr. Longley references President Nixon's visit to Camp Lejeune and he includes a photograph with the caption "President Nixon at main parade grounds, 30 Oct. 1971," (Image 1). Dr. Longley cites a collection of Marine Corps films at the University of South Carolina (USC).³⁹ However, there is a problem with this image and with Dr. Longley's remark about President Nixon's visit to Camp Lejeune: it never happened. There is no film in this collection at USC that shows President Nixon at Camp Lejeune. There is, however, film of Nixon at Marine Corps Base Camp Pendleton on "Possibly April 30, 1971" as shown in Image 2. Image 2 is a screenshot of the video at time stamp 1:51 and is a very close match (if not identical) to the image on page 13 of Dr. Longley's report.

There is additional evidence to dispute further the idea that President Nixon visited Camp Lejeune on October 30, 1971. The White House's Daily Diary provides us with the answer. On the morning of October 30, 1971, the president was at the White House and had meetings with advisors including Henry Kissinger and H.R. Haldeman. Shortly after noon he and the first lady flew to Camp David where he spent the afternoon watching the Nebraska-Colorado football game. After the game the president spent much of the remainder of the day on the telephone.⁴⁰ According to a September 4, 2020, article in the Jacksonville publication, *The Daily News*, which listed the U.S. presidents who had visited Camp Lejeune, President Nixon never visited Camp Lejeune while in office.⁴¹

³⁹ Longley Report, 12/7/2024, footnote 26, is the citation for this photograph that reads: "U.S. Marine Corps, 'Nixon's Visit to Camp Lejeune,' 30 October 1971, U.S. Marine Corps Film Repository, Research Collections, University of South Carolina."

⁴⁰ "President Richard Nixon's Daily Diary," 10/30/1971, see, <https://www.nixonlibrary.gov/sites/default/files/virtuallibrary/documents/PDD/1971/062%20October%2016-31%201971.pdf>, pdf pages 62-63.

⁴¹ C. Shomaker, "U.S. Presidents who visited Camp Lejeune while in office," *The Daily News*, 9/4/2020, see, https://www.jdnews.com/news/u-s-presidents-who-visited-camp-lejeune-while-in-office/article_38787c91-67f4-5dfc-8ed4-366617b67731.html.

Image 1

Page 13 of Dr. Kyle Longley's December 7, 2024, Report



President Nixon at main parade grounds, 30 Oct. 1971

base commissaries and clubs.

One of the most prominent gathering spaces on base was Hadnot Point's main parade grounds. Here, crowds would gather for many events, including change of command parades and ceremonies, the Fourth of July, returns from overseas deployments, and other formal occasions like President Nixon's visit to the base in 1971.²⁶ The parade grounds also hosted the major reviews for the Marine Corps Birthday bash, traditionally held on November 10, which included many ceremonies and

²⁵ *The Globe*, 2 January 1970.

²⁶ U.S. Marine Corps, "Nixon's Visit to Camp Lejeune," 30 October 1971, U.S. Marine Corps Film Repository, Research Collections, University of South Carolina.

Image 2

Film of President Nixon Visiting Marine Corps Base Camp Pendleton⁴²

Short Description

Title: USMC 110012: ""Nixon's visit to Camp Pendleton""
Description: President Nixon visits Camp Pendleton. The President shakes hands with Marine Officers, waves to Marine and civilian spectators from the back of a civilian automobile, and departs via VH3A. Marine Corps musicians perform songs throughout.

Running Time: 20:35
Location(s): Camp Pendleton (CA)

Item Description

Title	USMC 110012: ""Nixon's visit to Camp Pendleton""
Citation information	USMC 110012: ""Nixon's visit to Camp Pendleton"". United States Marine Corps Film Repository. Moving Image Research Collections. University of South Carolina.
USMC History Division inventory no	103134/1
Marine Corps Library Number	0000-16
MIRC inventory no.	USMC 110012
Decade	1970
Date	1971
Description	President Nixon visits Camp Pendleton. The President shakes hands with Marine Officers, waves to Marine and civilian spectators from the back of a civilian automobile, and departs via VH3A. Marine Corps musicians perform songs throughout.
Location(s)	Camp Pendleton (CA)
Genre	Informational
Film date (note)	Possibly April 30, 1971
Item collection	United States Marine Corps Film Repository
Original color	B&W

⁴² The hyperlink for the video is: <https://digital.tcl.sc.edu/digital/collection/MarineCorps/id/5997/rec/1>.

In addition to neglecting testimony stating that water fill stations existed beyond Hadnot Point, which I discuss below in Section VIII, Dr. Longley entirely misrepresents the photograph on page 34 of his report, captioned “Marines fill water buffalo, Hadnot Point” as shown in Image 3. In fact, the individuals in the photograph are not Marines and the photograph was not taken at Hadnot Point or even at Camp Lejeune. As shown in Image 4 below, the photograph that Dr. Longley uses is actually of New Jersey Army National Guardsmen filling a water buffalo “in preparation for Hurricane Sandy” on October 26, 2012.

Image 3
Page 34 of Dr. Kyle Longley’s December 7, 2024, Report



Marines fill water buffalo, Hadnot Point

According to General Anthony Zinni, during the Vietnam War era, Marines went out on maneuvers for weeks at a time. To hydrate, they used water buffaloes, wheeled water tanks that provided water during field training and operations. The logistics command was the fourth service support group located at Hadnot Point, the industrial area, and they had responsibility for providing this water.⁹⁰

On field days, many Marines used water buffaloes for hydration, brushing teeth, shaving, cooking, cleaning and

Image 4
Army National Guardsmen Fill a Water Buffalo with Potable Water in Preparation for Hurricane Sandy at the National Guard Armory in Lawrenceville, NJ, October 26, 2012⁴³

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261012-A-YG824-045.JPG Photo By: Staff Sgt. Wayne R. Wooley, U.S. Army

Lawrenceville, NJ - Staff Sgt. Robert Nieratko, top, and Pfc. Michael McAteer, both with the 50th Infantry Brigade Combat Team, New Jersey Army National Guard, fill a water buffalo with potable water in preparation for Hurricane Sandy at the National Guard Armory in Lawrenceville, N.J., Oct. 26, 2012.

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⁴³ National Guard “News Images,” <https://www.nationalguard.mil/Resources/Image-Gallery/News-Images/igphoto/2000709524/>.

Dr. Longley also includes a picture on page 10 of his report with a caption that reads “Water Treatment Plant near Holcomb Boulevard, 1960s” as shown in Image 5.⁴⁴

Image 5
Page 10 of Dr. Kyle Longley’s December 7, 2024, Report



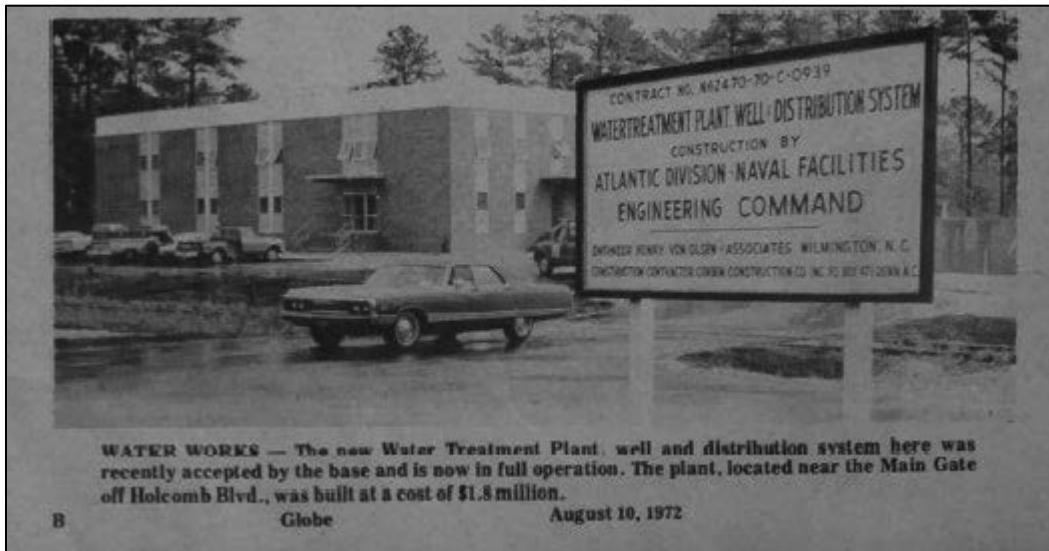
Water Treatment Plant near Holcomb Boulevard, 1960s

the main administrative buildings, and at the hospital complex. There were even hoses across the

The distribution of water during the period from 1942 through the late 1980s was simpler than today. While, today, people rely on bottled water, many different types of sodas and other drinks, and filters, even in public locations, the same was not true in the 1950s, 60s, 70s and 1980s. Back then, most people drank tap water from the faucet, or used it to create teas, coffee, or a favorite of many people, sweetened Kool-Aid, and later, Gatorade.²⁰ There were water fountains in the barracks, the schools, the shops on base,

He provides no citation for this photograph. Again, the reader is unable to check the origins of the picture and therefore the accuracy of the caption. In fact, Dr. Longley’s caption is incorrect as the Holcomb Boulevard WTP did not start operating until 1972, as I stated in my December 9, 2024, report. This picture appeared in *The Globe* on August 10, 1972, as shown in Image 6.⁴⁵

Image 6
***The Globe*, August 10, 1972⁴⁶**



⁴⁴ Longley Report, 12/7/2024, 10.

⁴⁵ Brigham Report, 12/9/2024, 38 and footnote 108.

⁴⁶ *The Globe*, 8/10/1972, BRIGHAM_USA_0000024981, at *0000024986.

The mischaracterization of the image of President Nixon allegedly visiting Camp Lejeune, the photograph of the water buffalo, and the photograph of the Holcomb Boulevard WTP are especially egregious oversights for a trained historian such as Dr. Longley and make me further call into question his findings.

My discussion in this section of this report supports opinion 1 of this report regarding Dr. Longley's failure to use accepted practices that historians follow when writing narratives and expressing their findings. In the remainder of this report, I will critique several major points of Dr. Longley's December 7, 2024, expert witness report.

IV. Camp Lejeune is Larger than Hadnot Point and Tarawa Terrace; the Other Areas of the Base Are Not Alleged to Have Contamination

A. Introduction

While I agree with Dr. Longley that Hadnot Point was central to certain base activities at Camp Lejeune, Dr. Longley's "county seat" analogy is lacking. It fails to take into consideration the significance of other areas of the base during the statutory time period and the fact that each of these areas received water from different, non-contaminated sources.⁴⁷ Notably, Dr. Longley's report does not include any substantive description of other areas of the base where Marines lived, worked, and trained. In my December 9, 2024, report, I never deny that Hadnot Point was the center of base activities at Camp Lejeune. In my report I discussed the early construction of base headquarters at Hadnot Point, the regimental areas, the training pools, family housing, officer quarters at Paradise Point, and the build-out of French Creek. But much like the towns and communities surrounding a county seat would have their own services, amenities, and recreational opportunities, the areas at Camp Lejeune away from Hadnot Point had their own services, amenities, recreational activities, and, significantly, housing. While a county seat likely would be the location of county courts, county fire, and police headquarters, the surrounding areas would have infrastructure and services to support their residents. At Camp Lejeune, the areas surrounding Hadnot Point had such infrastructure, including water treatment plants.

Specifically, six areas of Camp Lejeune did not receive contaminated water from the Hadnot Point WTP or the Tarawa Terrace WTP: Montford Point / Camp Johnson, Camp Geiger, MCAS New River, Rifle Range at Stone Bay, Onslow Beach, and Courthouse Bay. A seventh service area, that I refer to as the Holcomb Boulevard service area, was created in 1972 when the Holcomb Boulevard WTP began serving the family housing areas of Paradise Point, Berkeley

⁴⁷ Longley Report, 12/7/2024, 16, 43.

Manor, and Midway Park that had been previously served by the Hadnot Point WTP.⁴⁸ As I discussed in my December 9, 2024, report, during most of the statutory period each of these areas had their own water systems or shared water systems with other Non-Contaminated Areas. As a result, people living in these areas had less exposure to the contaminated water pumped from the Hadnot Point and Tarawa Terrace WTPs. Camp Geiger was home to the first WTP on the base and that plant remained in operation until 1976, when it went offline and the MCAS New River WTP began servicing the Camp Geiger area. At the other five areas of the base, water was chlorinated before use before the Marine Corps eventually built WTPs in each of these areas as well.⁴⁹ The ATSDR has not found, and Plaintiffs have not alleged, that any of these areas—which take up a large percentage of the Camp Lejeune base—ever had contaminated water.

B. Montford Point / Camp Johnson

Dr. Longley's report fails to take into consideration the self-sufficient nature of Montford Point / Camp Johnson. Montford Point, renamed Camp Johnson in 1973, dates to World War II and was initially designed to house and train black troops prior to the integration of the Marine Corps in 1949. During the statutory period, Montford Point / Camp Johnson was primarily used for specialized schooling and training. Schools at Montford Point / Camp Johnson included the Field Medical Service School and the Support / Supply Schools that offered courses on several subjects.⁵⁰ In 1969, for example, at Montford Point / Camp Johnson there were 1,269 people, and

⁴⁸ Brigham Report, 12/9/2024, 7 and footnote 9. The Holcomb Boulevard TWP also provided water to Watkins Village when it opened in 1977, Brigham Report 12/9/2024, 43.

⁴⁹ Brigham Report, 12/9/2024, 18, 20, Table 1 on 23, and footnote 64. An early example of this was at Camp Geiger / Tent City during World War II. The population of Tent City required drinking water and workers drilled numerous wells and built a water distribution system, with the water being treated with chlorine for disinfection purposes. Water was stored in two 272,000 storage tanks (Brigham Report, 12/9/2024, 17-18).

The second Completion Report states: "Chlorination is effected [sic] by a solution feed manually adjusted chlorinator with maximum capacity of 40 lbs. per 24 hrs. This machine is semi-automatic, designed to start and stop when either of the service pumps is operated. This feature is accomplished through solenoid valves placed in the water supply line to the chlorinator with one solenoid in each pump circuit," see Carr and J. E. Greiner Company, "Completion Report Covering the Design of Camp Lejeune U.S. Marine Barracks New River, North Carolina for the U.S. Navy Bureau of Yards and Docks, Contract Number 4751, April 15, 1941-September 30, 1942," Vol. II, CLJA_USMCGEN_0000161226, at *0000161440.

As shown in a table in the 1986 Master Plan Update, the seven WTP systems operating in that year had elevated storage tanks, see 1986 Master Plan Update, CLJA_USMCGEN_00000326502, at *0000326763.

⁵⁰ Brigham Report, 12/9/2024, 57-58.

in 1983 there could have been as many as 2,768.⁵¹ To house the trainees and staff, there originally were H-style barracks at Montford Point / Camp Johnson. By the 1980s, hotel-style barracks had started to replace the H-style barracks.⁵² In addition, by at least 1959, and continuing through the rest of the statutory period, there were numerous services and amenities at Montford Point / Camp Johnson that made travel to the Mainside largely unnecessary unless a Marine was required to do so for official business. For example, Marines and their families had access to a base exchange store, a library, an indoor theatre, and several service clubs at Montford Point / Camp Johnson.⁵³ The 1970 Master Plan described Montford Point as “isolated from Mainside,” and it was one of the areas identified in the 1986 Master Plan Update as having a lengthy travel time to Hadnot Point.⁵⁴

C. Camp Geiger

Dr. Longley’s report fails to account for the self-sufficient nature of Camp Geiger. As I discussed in my December 9, 2024, report, Camp Geiger, originally called Tent Camp No. 1, was the first location of the 1st Marine Division headquarters in 1941.⁵⁵ During most of the statutory period, Camp Geiger was home to the Infantry Training Regiment (ITR) and the Nuclear, Biological, and Chemical School (NBC School).⁵⁶ The 1970 base guided stated that it was “the job of the First Infantry Training Regiment at Camp Lejeune” to turn recent basic training graduates into “self-confident, ‘thinking’ Marines capable of handling any situation at a moments [sic] notice.”⁵⁷

⁵¹ Brigham Report, 12/9/2024, 58. These numbers are based on the effective service population that is defined in the 1986 Master Plan Update as: “The effective service population data . . . were developed from data indicating where military and civilian employees work and where military personnel and their dependents reside. The calculated data for the effective service population takes into account the proportional parts of each day that military and civilian personnel and dependents of the military personnel would be in each service area,” 1986 Master Plan Update, CLJA_USMCGEN_0000326502, at *0000326746.

⁵² Brigham Report, 12/9/2024, 60-61.

⁵³ Brigham Report, 12/9/2024, 61.

⁵⁴ Brigham Report, 12/9/2024, 62.

⁵⁵ Brigham Report, 12/9/2024, 11. The 1st Marine Division later relocated to Pendleton, CA where it remains today.

⁵⁶ Brigham Report, 12/9/2024, 64-71.

⁵⁷ 1970 Base Guide, Base_Guides_0000000254, at *000000271.

At a single point in time at Camp Geiger in 1969 there were 4,212 military personnel, most of them students.⁵⁸ Many more Marines spent time at Camp Geiger in a given year than were stationed there at a single point in time, due to the fact that many were trainees at the Infantry Training School. Though course times varied over the years, the training course typically lasted only a short period of time. A 1972 *Leatherneck* article gave information on the number of Marines that trained at the Infantry Training Regiment (ITR) from 1969-1971. In 1969, 39,000 Marines trained; in 1970 23,000 Marines trained; and the Marine Corps estimated that in 1971 approximately 21,000 Marines would train at the ITR.⁵⁹ The length of training changed over time. For example, in 1966 it was nineteen days, in 1970 training took thirty-six days, in 1980 it was four weeks, and in 1985 it was five weeks.⁶⁰

Housing at Camp Geiger included the Camp Geiger Trailer Park from the beginning of the statutory period through 1983 and troop housing for the entire statutory period.⁶¹ There were also numerous amenities at Camp Geiger by at least 1959 and such amenities continued to exist throughout the statutory period.⁶² By 1959 at Camp Geiger, there was a theatre, a base exchange store, a community center and service clubs, among other amenities.⁶³ The 1970 base plan described Camp Geiger as “somewhat isolated” and long travel times to Hadnot Point made such trips “prohibitive.”⁶⁴ And the 1986 Master Plan Update, noted that Montford Point—which is closer to Hadnot Point than Camp Geiger—had long travel distances to Hadnot Point.⁶⁵

D. Marine Corps Airfield / Marine Corps Air Station New River

Dr. Longley’s report fails to take into account the self-sufficient nature of Marine Corps Airfield / MCAS New River. The Marine Corps Airfield, later known as MCAS New River, is physically part of Marine Corps Base Camp Lejeune, but those stationed there do not take orders from the base’s commanding general and instead take orders from the Commander, Marine Air

⁵⁸ Brigham Report, 12/9/2024, 62.

⁵⁹ T. Bartlett, “ITR Boot Camp Post Grad. . . ,” *Leatherneck*, 6/1971, 41.

⁶⁰ Brigham Report, 12/9/2024, 66.

⁶¹ Brigham Report, 12/9/2024, 67-69.

⁶² Brigham Report, 12/9/2024, 70.

⁶³ Brigham Report, 12/9/2024, 70-71.

⁶⁴ Brigham Report, 12/9/2024, 74.

⁶⁵ Brigham Report, 12/9/2024, 62.

Bases, Eastern, Cherry Point, N.C.⁶⁶ In 1970 “approximately 4,000 officers and men” “manned” the MCAS New River facility, and in 1983 on average about 5,037 people were assigned to the facility each month.⁶⁷

As I discussed in my December 9, 2024, report, by the mid-1950s barracks and amenities were located at the airfield. By the end of the 1950s, family housing construction was under way. New construction continued in subsequent decades.⁶⁸ Similar to Montford Point / Camp Johnson and Camp Geiger, the Marine Airfield / Air Station was separated from and had “prohibitive” travel distances to Hadnot Point, as discussed in the 1970 and 1986 base plans.⁶⁹

E. Rifle Range at Stone Bay, Onslow Beach, and Courthouse Bay

Dr. Longley’s report fails to give an accurate portrayal of Camp Lejeune by not adequately discussing Rifle Range at Stone Bay, Onslow Beach, and Courthouse Bay. At Rifle Range, Marines received their required yearly rifle requalification and at Onslow Beach, Marines participated in amphibious assault training and recreational activities.⁷⁰ At Courthouse Bay, there were amenities available both to those Marines and their families that lived there as well as to Marines onsite taking engineering courses.⁷¹ Dr. Longley does not mention that there were barracks and amenities available to Marines at each of these three areas.

As I wrote in my December 9, 2024, report, Marines lived at the Rifle Range when fulfilling this training because it was too far from Hadnot Point to travel there each morning, and both the 1970 Master Plan and the 1986 Master Plan Update described the Rifle Range as “isolated.”⁷²

⁶⁶ Brigham Report, 12/19/2024, 9, footnote 14.

⁶⁷ 1970 Base Guide, New River Marine Corps Air Station, Base_Guides_0000000328, at *000000334; and 1986 Master Plan Update, CLJA_USMCGEN_0000326502, at *0000326950.

⁶⁸ Brigham Report, 12/9/2024, 9, 72-74.

⁶⁹ Brigham Report, 12/9/2024, 74; 1970 Master Plan, CLJA_USMCGEN_0000336978 at *0000337049; and 1986 Master Plan Update, CLJA_USMCGEN_0000326502, at *0000326615.

⁷⁰ Brigham Report, 12/9/2024, 75, 77.

⁷¹ Brigham Report, 12/9/2024, 80, 83.

⁷² Brigham Report, 12/9/2024, 76.

In footnote 123 of his report, Dr. Longley notes that Onslow Beach was “where recon was historically” without providing further explanation or description.⁷³ Onslow Beach was well suited for amphibious landing training and warfare, which was one of the reasons that the Marine Corps selected the area that became Camp Lejeune for development.⁷⁴ Such training continued during the statutory period, as discussed by articles in *The Globe*.⁷⁵ During World War II, three barracks and a mess hall were built at Onslow Beach.⁷⁶ The 1986 Master Plan Update notes that minimal troop housing, (but no family housing) existed at Onslow Beach.⁷⁷ Among amenities at Onslow Beach that Marines could enjoy were a beach pavilion, a commissioned officers’ mess hall, and snack bars.⁷⁸ Onslow Beach was far enough from Hadnot Point that the area needed its own community facilities.⁷⁹

Courthouse Bay was and is the home of the engineering school at Camp Lejeune. It too dates to the earliest years of the base during World War II. As I discussed in my December 9, 2024, report, numerous courses of varying lengths were taught at the engineering school at Courthouse Bay during the statutory period.⁸⁰ A 1979 *Leatherneck* article stated that “3,000 or so students . . . graduate from Courthouse Bay each year.”⁸¹ The author of this article also noted that usually there were “600 to 650 students on board, which is close to camp capacity” and that Courthouse Bay was “25 miles from mainside [sic]—and several miles from the community of Sneads Ferry.”⁸² A June 1988 *Leatherneck* article stated that there were four companies at the engineering school, “Headquarters and Service Company, Combat Engineer Instruction

⁷³ Longley Report, 12/7/2024, 43, footnote 123.

⁷⁴ Brigham Report, 12/9/2024, 10-11, 77-78.

⁷⁵ See for example, “TAGLEX ‘D’ Day Saturday As Defending Forces Dig In,” *The Globe*, 4/22/1954, BRIGHAM_USA_0000014164; “President Kennedy Will See Landing,” *The Globe*, 4/12/1962, BRIGHAM_USA_0000020669; “Solid Shield-78, U.S. forces come to aid of embattled ‘Atlantis,’” *The Globe*, 6/1/1978, BRIGHAM_USA_0000028250; and C. Brown, “Wargame sets Camp Lejeune as mock battlefield,” *The Globe*, 5/12/1983, BRIGHAM_USA_0000040466, at *0000040468.

⁷⁶ Brigham Report, 12/9/2024, 78.

⁷⁷ Brigham Report, 12/9/2024, 78.

⁷⁸ Brigham Report, 12/9/2024, 78.

⁷⁹ Brigham Report, 12/9/2024, 78.

⁸⁰ Brigham Report, 12/9/2024, 82.

⁸¹ H. Richardson, “Blue Collar University,” *Leatherneck*, 8/1979, pdf page 5.

⁸² H. Richardson, “Blue Collar University,” *Leatherneck*, 8/1979, pdf pages 2-3.

Company, Engineer Equipment Instruction Company and Utilities Instruction Company” [and] that more than 4,500 students took the courses offered at the school each year.”⁸³ There was also housing at Courthouse Bay, including barracks and bachelor officers’ quarters and a small number of family housing units. Numerous amenities were available to Marines and their families at Courthouse Bay.⁸⁴ As at other areas of Camp Lejeune away from Hadnot Point, Courthouse Bay had amenities that Marines and their families could use, including a base exchange, a theater, a library, service clubs, and a number of recreational facilities.⁸⁵ Similar to the other areas discussed in this section, the distance from Courthouse Bay to Hadnot Point made travel “prohibitive.”⁸⁶ In September 1983, a *Globe* article referenced the distance from Courthouse Bay to “everything else.” In the article, Captain Ferguson stated: “We try to get special services active out here in Courthouse Bay . . . we’re so far away from everything else that we feel it is important to give our men something for entertainment.”⁸⁷

My discussion in this section of my report supports opinions 2 and 3 of this report regarding Dr. Longley’s belief in the centrality of Hadnot Point and his lack of examination of water treatment plants that provided water to other areas of the base.

V. Many Family Housing Areas Did Not Receive Contaminated Water and Many of the Activities of Daily Living Dr. Longley Discusses Took Place in Non-Contaminated Areas of the Base

A. Family Housing and Activities

Dr. Longley’s report fails to appreciate the significance of non-contaminated WTPs serving particular family housing areas at different times during the statutory period. In Section “VIII. Family Housing and Activities,” Dr. Longley discusses areas with family housing that received contaminated water including “Tarawa Terrace, Knox Trailer Park, Midway Park, Paradise Point, and Berkeley Manor.”⁸⁸ However, because Dr. Longley did not examine all the areas of the base and their respective WTPs at Camp Lejeune during the statutory period, this list

⁸³ V. Vanden Bout, “Engineering School, The ABCs of Moving Mountains And Building Bridges,” *Leatherneck*, 6/1988, 34.

⁸⁴ Brigham Report, 12/9/2024, 82-83.

⁸⁵ Brigham Report, 12/9/2024, 83.

⁸⁶ Brigham Report, 12/9/2024, 84.

⁸⁷ R. Braub, “Softball with a kick,” *The Globe*, 9/29/1983, 23.

⁸⁸ Longley Report, 12/7/2024, 24.

needs further explanation. At times during the statutory period, family housing at Tarawa Terrace I and II received contaminated water.⁸⁹ The Knox Trailer Park at times received contaminated water from the Tarawa Terrace WTP, but it also received water from the Montford Point / Camp Johnson WTP, which neither Plaintiffs, nor ATSDR have alleged had contaminated water.⁹⁰ Additionally and significantly, when the Holcomb Boulevard WTP started operations in 1972, it began serving areas that had been previously serviced by the Hadnot Point WTP, including family housing at Midway Park, Berkeley Manor, and Paradise Point as well as the officers' club at that location and the Naval Hospital and its associated housing.⁹¹ After its construction, the Holcomb Boulevard WTP, as I discuss earlier in this report, only intermittently supplied contaminated water to its service area during the statutory time period. It is also important to note that family housing beyond Hadnot Point and Tarawa Terrace, such as at the Geiger Trailer Park and at MCAS New River, were serviced by WTPs that were independent of the contaminated water systems identified by ATSDR.

B. Schools and Pools

Dr. Longley's report also fails to appreciate that certain schools and pools were serviced by non-contaminated WTPs. Section IX of Dr. Longley's report examines schools, and Section XIV discusses swimming pools.⁹² Regarding schools, he writes that by the late 1960s there were seven elementary schools and one high school at Camp Lejeune. This is correct, and I discussed schools on base during the statutory time period in my December 9, 2024, report, including a listing of schools in Tables 3 through 5. Table 4 of my report includes the Montford Point Elementary School, and DeLallo Elementary School, neither of which received contaminated water from the Tarawa Terrace or Hadnot Point WTPs. After the Holcomb Boulevard WTP went online in 1972, the Stone Street Elementary School, the Berkeley Manor Elementary School

⁸⁹ Per my December 9, 2024, report, Opinion Three, page 2, and my discussion of the ABC One-Hour Cleaners, pages 24-33, it is my opinion, based on numerous contemporaneous documents, that the cleaners started operations in or after June 1954. Dr. Longley did not discuss ABC One-Hour Cleaners, which was identified as a source of contamination, in his December 7, 2024, report. My review of the 1/14/2025 Longley and Maslia reports do not change this opinion due to their sole reliance on deposition testimony from decades later.

⁹⁰ Brigham Report, 12/9/2024, 56.

⁹¹ See Images 19 and 24 on pages 39 and 50, and pages 42-44, Brigham report 12/9/2024. As I note on pages 42-44, there were times intermittently between 1972 and 1985 that water from Hadnot Point WTP was pumped into the Holcomb Boulevard water system. The Watkins Boulevard family housing complex opened in 1977 and was never connected to the Hadnot Point WTP but would have received contaminated water when the Holcomb Boulevard distribution system received water from the Hadnot Point WTP, see Brigham Report, 12/9/2024, 49.

⁹² Longley Report, 12/7/2024, 28 and 37.

listed in Table 4, and the Brewster Junior High School and Camp Lejeune Senior High School listed in Table 5 did not receive contaminated water except when the Holcomb Boulevard system, on occasion, received water from the Hadnot Point WTP.⁹³

Similarly, those swimming pools not served by the Tarawa Terrace or Hadnot Point WTPs did not receive contaminated water.⁹⁴ Per Table 2 of my report of December 9, 2024, the pool at Montford Point / Camp Johnson, the two pools at MCAS New River, and the pool at the Paradise Point Officers' Club after 1972 received water from WTPs that were not contaminated.⁹⁵

My discussion in this section of my report adds support to opinions 2 and 3 of this report regarding Dr. Longley's belief in the centrality of Hadnot Point and his lack of examination of water treatment plants that provided water to other areas of the base.

VI. Off-Base Housing

Dr. Longley's report fails to account for the significant off-base housing for Camp Lejeune Marines. For most of the statutory period, there was a housing shortage at Camp Lejeune that required Marines and their families to live off base. As I discussed in my December 9, 2024, report, a housing shortage occurred during the Korean War that led the government to start a housing construction program.⁹⁶ The 1962 Base Guide listed wait times for housing that varied according to rank and housing needs for the Knox and Geiger Trailer Parks, Midway Park, Tarawa Terrace, and Paradise Point.⁹⁷ The 1966 Base Guide, published when the United States' and the Marine Corps' involvement in Vietnam was increasing, includes a several page discussion of Camp Lejeune housing. In the overall discussion of housing, it is noted that temporary government housing was unavailable. There is also discussion of "Inadequate Public Quarters," meaning unfurnished houses or furnished trailers. Although the 1966 Base Guide did

⁹³ Brigham Report, 12/9/2024, 87-94.

⁹⁴ The third completion report noted that the Montford Point swimming pool "will take untreated water directly from the distribution for filling and for makeup purposes." Although the water had "carbonic acid gas and iron," they could be removed through filtration, see, Carr and J. E. Greiner Company, "Completion Report Covering the Design of Camp Lejeune U.S. Marine Barracks New River, North Carolina for the U.S. Navy Bureau of Yards and Docks, Contract Numbers 6006 and 7795, October 1, 1942-December 18, 1943," Vol. III, CLJA_USMCGEN_0000209879, at *0000210110.

⁹⁵ Brigham Report, 12/9/2024, 84-87.

⁹⁶ Brigham Report, 12/9/2024, 24. Also see 1952 Base Guide, Base_Guides_0000000058, at *0000000065.

⁹⁷ 1962 Base Guide, Base_Guides_0000000077, at *0000000081.

not explicitly state that there was a housing shortage, the reference to inadequate quarters suggested a housing shortage existed. There were also instructions on locating private housing in the neighboring communities of Jacksonville and Swansboro.⁹⁸ One study of Camp Lejeune during the Vietnam Era states that despite the 4,810 family housing units on base, almost half of Camp Lejeune's 60,000 military personnel, including families had to secure housing off base.⁹⁹

The 1970 Camp Lejeune Master Plan identified housing as a problem at Hadnot Point. As I wrote in my December 9, 2024, report, in 1967 the Marine Corps Commandant requested that a master plan be prepared that would include an examination of Hadnot Point, including French Creek. The growth of the Force Troops—the Marines assigned to Camp Lejeune who supported the activities of the Second Marine Division, later designated 2d FSSG—necessitated construction at French Creek including the “new Force Troops Complex.”¹⁰⁰ The 1970 Master Plan noted: “The increase in supporting facilities for the troop units, and resultant housing for these additional units, has formed the largest single problem on the Base.”¹⁰¹

The 1986 Master Plan Update also addressed on and off base housing. The authors of this document noted that “military families with relatively high disposable incomes” drove the demand for off-base family housing.¹⁰² They further noted that as Camp Lejeune’s population grew so did the population of Jacksonville and Onslow County.¹⁰³ The Master Plan Update further characterizes the relationship of the base to the city as symbiotic: the city and county benefited from the “economic stability” that the base provided and the “Camp Lejeune Complex relies upon the surrounding areas to provide civilian housing and many community support facilities, such as churches, movie theaters and commercial facilities.”¹⁰⁴

When focusing on family housing, the authors of the 1986 Master Plan Update reported in June 1984, “4,175 military personnel and 11,360 of their dependents” lived in on-base family

⁹⁸ 1966 Base Guide, Base_Guides_0000000098, at *0000000119-120.

⁹⁹ USMC, *Semper Fidelis, A Brief History of Onslow County, North Carolina, and Marine Corps Base, Camp Lejeune*, (2004), Brigham_USA_0000008862, at *0000008937.

¹⁰⁰ Brigham Report, 12/9/2024, 37-38 (including footnote 104), 47-48.

¹⁰¹ 1970 Camp Lejeune Master Plan, CLJA_USMCGEN_0000336978, at *0000337073.

¹⁰² 1986 Master Plan Update, CLJA_USMCGEN_0000326502, at *0000326597.

¹⁰³ 1986 Master Plan Update, CLJA_USMCGEN_0000326502, at *0000326598.

¹⁰⁴ 1986 Master Plan Update, CLJA_USMCGEN_0000326502, at *0000326599.

housing while “7,750 military and 20,305 dependents resided in off-base housing.”¹⁰⁵ The authors concluded: “There is no real family housing deficiency as long as off-base-housing continues to be available and acceptable to military personnel.”¹⁰⁶

My discussion in this section of my report supports my opinion 4 of this report, that Marines and their families lived off-base.

VII. Marines and Their Families Could Leave Camp Lejeune and Use Off-Base Services and Participate in Off-Base Recreational Opportunities

I respectfully disagree with Dr. Longley’s conclusion that Marines would rarely leave base, as evidence exists that Marines were able to leave the base and, in fact, as I discuss above in Section VI of this report, many Marines and their families lived off base.¹⁰⁷

Even during World War II, Marines could leave Camp Lejeune. A front-page *Globe* article from November 1944 discussed leave and liberty passes.¹⁰⁸ A 1960 front-page *Globe* article discussed the process for Marines leaving base overnight, which differed based on the Marine’s rank, the length of time away, and how far they were traveling. A lower-level enlisted Marine (E-5 and below) needed only a “Liberty card” for the “routine, overnight” travel in an 85-mile radius from the base, and the article referred to such travel as “normal overnight liberty.”¹⁰⁹ Such Marines needed a “liberty pass” to travel for 72 to 96 hours in a 600-mile area (which according to the article encompassed Atlanta, Chattanooga, and New York City). In contrast: “Officers and staff noncommissioned officers are not required to have special liberty passes except when travel is to be through an area where regulations of another service require passes.”¹¹⁰

¹⁰⁵ 1986 Master Plan Update, CLJA_USMCGEN_0000326502, at *0000326702.

¹⁰⁶ 1986 Master Plan Update, CLJA_USMCGEN_0000326502, at *0000326710.

¹⁰⁷ Longley Report, 12/7/2024, 11. See also Brigham Report, 12/9/2024, 24.

¹⁰⁸ “New Liberty [illegible] Rules [illegible] Lejeune,” *The Globe*, 11/15/1944, BRIGHAM_USA_0000009726. Although the article was only partially imaged, it is clear that leave and liberty passes are the focus of the article.

¹⁰⁹ “Lejeune Liberty Travel Limits Extended, 600 Miles Authorized For 72-96 Hour Pass,” *The Globe*, 12/1/1960, BRIGHAM_USA_0000020208. The 85-mile radius had just been extended from 50 miles, which was one of the impetuses for *The Globe* article.

¹¹⁰ “Lejeune Liberty Travel Limits Extended, 600 Miles Authorized For 72-96 Hour Pass,” *The Globe*, 12/1/1960, BRIGHAM_USA_0000020208.

In 1970 the Marine Corps changed regulations regarding liberty cards (the cards required when lower-level Marines left base for overnight leave). Liberty cards were no longer required for those ranked E-4s and below unless a local commander required a card. Liberty passes remained a requirement for, “such occasions as 96-hour liberty in distant cities.”¹¹¹ The following week, *The Globe* published another story discussing the changed regulations, making clear that the “organization commanders” still had the discretionary power to grant leave.¹¹² The requirement for a 96-hour liberty pass continued into the 1980s.¹¹³

Besides Marine Corps regulations regarding leave, *The Globe* published information on business establishments that were “off-limits” to Marines, which indicates that Marines did leave the base and patronized businesses in Jacksonville that were not off-limits, reputable or otherwise. The front-page of the August 6, 1959, issue of *The Globe* contained an “OFF LIMITS” notice that stated two businesses in Jacksonville had been declared “out of bounds” in a recent base bulletin.¹¹⁴ A similar announcement appeared in *The Globe* the following March.¹¹⁵ In April 1962, an announcement in *The Globe* listed eight off-limit establishments “to all military personnel” in several counties including one in the Jacksonville area.¹¹⁶ A comparable announcement appeared in 1966.¹¹⁷ An article in *The Globe* from July 1969 urged Camp Lejeune members of the military to follow regulations and stated that the Jacksonville Military Police Detachment would “apprehend” anyone found in an off-limit establishment.¹¹⁸

Such announcements continued in the 1970s and 1980s. Following the killing of Navy Corpsmen at the Long Branch Bar in Jacksonville in February 1972, the Camp Lejeune

¹¹¹ “Liberty Cards,” *The Globe*, 9/18/1970, BRIGHAM_USA_0000022861.

¹¹² “For E-4’s and below, I.D. replaces liberty card,” *The Globe*, 9/25/1970, BRIGHAM_USA_0000022747.

¹¹³ “Car-related accidents,” *The Globe*, 11/4/1982, BRIGHAM_USA_0000035672, at *00000356674. This article discusses the death of a Marine killed when he was hit by a truck while on leave.

¹¹⁴ “Off Limits,” *The Globe*, 8/6/1959, BRIGHAM_USA_0000013586.

¹¹⁵ “Off Limits,” *The Globe*, 3/3/1960, BRIGHAM_USA_0000020078, at *0000020083.

¹¹⁶ “A[illegible] Off-Limits to [illegible]ary Personnel,” *The Globe*, 4/12/1962, BRIGHAM_USA_0000020669, at *0000020671.

¹¹⁷ “N.C. Off Limits Areas Outlined For Military,” *The Globe*, 9/29/1966, BRIGHAM_USA_0000021239 (listing off-limit areas throughout the state, including Jacksonville).

¹¹⁸ “Don’t Take A Chance: Observe Regulations,” *The Globe*, 7/11/1969, BRIGHAM_USA_0000019454, at *0000019458.

commanding general placed the bar temporarily in an off-limits status.¹¹⁹ The writer of a letter to *The Globe* editor in April 1976 asked several questions concerning an order dated December 1971 to the Quad-Command designating off-limit establishments. Among his questions were if the listed establishments were still operating outside Marine Corps guidelines and if more establishments had been added to the list. He requested that the list of off-limits establishments be updated.¹²⁰

Another indicator that Marines travelled off base is the advertisements that appeared in the base guides. The 1966 base guide had advertisements for automobiles, hotels, banks, variety stores, and listings for many other types of Jacksonville business establishments in its 24-page “Classified Buying Guide” section.¹²¹ The 1970 base guide contained several pages of advertisements and a 13-page classified buying section.¹²² In this guide an advertisement for the Cape Fear Hotel in Wilmington offered military rates while the Babcock Realty Company in Jacksonville informed Marines that they maintained a list of available rental housing in the area under the banner “Welcome Aboard!”¹²³ In the 1972 base guide, the “Classified Buying Section”

¹¹⁹ “Bar Placed Off Limits, Suspect held in fatal assault on Corpsman,” *The Globe*, 2/3/1972, BRIGHAM_USA_0000025033, at *0000025035. Also see, “Off-limits extended,” *The Globe*, 3/9/1972, BRIGHAM_USA_0000024841, at *0000024842.

¹²⁰ D. Brady, “Clarification on off limits areas,” *The Globe*, 4/29/1976, BRIGHAM_USA_0000024455, at *0000024459. For additional information on off-limits establishment in the 1980s see, for example, “Control Board reinstated,” *The Globe*, 10/30/1980, BRIGHAM_USA_0000034372; “4 adult businesses declared off-limits,” *The Globe*, 6/4/1981, BRIGHAM_USA_0000036853, at *0000036855; “Off-limits list revised,” *The Globe*, 12/9/1982, BRIGHAM_USA_0000036066, at *0000036068; K. Zabawczuk, “Off limit establishments,” *The Globe*, 2/16/1984, BRIGHAM_USA_0000037460, at *0000037461; and “Off-Limits,” *The Globe*, 2/21/1985, BRIGHAM_USA_0000032389, at *0000032428. This last document is an announcement listing off-limit establishments that also states violating the order can result in a court-martial including “a Dishonorable Discharge and confinement at hard labor for two years,” *ibid.*

¹²¹ 1966 Base Guide, Base_Guides_0000000098, at *0000000121-22, *000000141, *000000149, and *000000154-177. The 1967 base guide also had a 16-page “Classified Buying Section,” 1967 Base Guide, Base_Guides_0000000180, at *0000000236-51.

¹²² 1970 Base Guide, Base_Guides_0000000254, at *000000298, *000000300, *0000000309, *0000000312-324, and *0000000326-327.

¹²³ 1970 Base Guide, Base_Guides_0000000254, at *000000318 and *000000321. The 1970 base guide for MCAS New River contained advertising and a classified buying guide similar to the 1970 base guide for Camp Lejeune, see 1970 Base Guide, New River Marine Corps Air Station, Base_Guides_0000000328, at *000000329, *000000358, and *0000000373-390. The 1971Base Guide for Camp Lejeune was similar to the 1970 Base Guide, see 1971 Base Guide, Base_Guides_0000000391, at *0000000424, *0000000438, and *0000000443-462.

was renamed “Military Yellow Page.”¹²⁴ The base guides for 1976 through 1979 also contain advertising from Jacksonville businesses. An advertisement for the Wilmington Hilton Inn offered a discount for the military for a “R & R Weekend Page.”¹²⁵ The 1977 base guide again contained a “Military Buyers Guide” as did the 1978 and 1979 base guides.¹²⁶ The same is true for the 1980 and 1984 base guides. An unsponsored half-page announcement in the 1984 base guide read: “Military Families! Welcome To The Installation and Our Fine Community.” Another announcement read “Advertise For Action In These Military ‘Yellow Pages.’”¹²⁷

My discussion in this section of my report supports opinions 2 and 4 of this report, regarding Dr. Longley’s belief in the centrality of Hadnot Point and that Marines left base for social and recreational purposes.

VIII. Filling of Water Buffaloes Away From Hadnot Point

In my December 9, 2024, report, in my fourth opinion, I opined that: “All of the [water treatment plants] at Camp Lejeune had the infrastructure to support the installation of standpipes used to fill water trailers in their respective areas.”¹²⁸ I discussed water trailers and standpipes on pages 97-104 of the report.¹²⁹ On pages 102-103 of my report, I discussed a diagram of a standpipe (Image 36) and noted:

A water-point standpipe is a rigid pipe which supplies water under pressure from an outlet high enough to service water trailers. The usual construction is a 2-in. pipe fastened to a vertical timber support. Several standpipes can be supplied from a common

¹²⁴ 1972 Base Guide, Base_Guides_000000465, at *0000000541-57.

¹²⁵ 1976 Base Guide, Base_Guides_0000000559, at *000000615; and “Military Classified Pages,” *0000000610-626; and 1979 Base Guide, Base_Guides_0000000759, “Military Buyers’ Guide,” *0000000806-824.

¹²⁶ 1977 Base Guide, Base_Guides_0000000627, at *000000628, *0000000676, and *000000678-94. The 1978 and 1979 base guides contained similar advertising, see 1978 Base Guide, Base_Guides_0000000695, at *000000740-58; and 1979 Base Guide, Base_Guides_0000000759, at *000000760, *0000000806, and *0000000807-824.

¹²⁷ 1980 Base Guide, Base_Guides_0000000829, at *000000830, *000000860, and *0000000861-870; and 1984 Base Guide, Base_Guides_0000000871, at *000000872 and *0000000904-922; the announcements appear on *0000000906 and *0000000913.

¹²⁸ Brigham Report, 12/9/2024, 2.

¹²⁹ Brigham Report, 12/9/2024, 97-104.

underground header, ‘implying that they can be installed anywhere with existing underground potable water pipes, like those that existed during the statutory period not only at Mainside, but also at Camp Geiger, Camp Johnson, Courthouse Bay, and MCAS New River as well.’¹³⁰

In contrast to my report, Dr. Longley generally fails to account for the likelihood that water buffaloes were at times filled with non-contaminated water away from Hadnot Point. Dr. Longley mentions the filling of water buffaloes in finding six of his report that reads, in part, “the use of canteens and wheeled water tanks known as water buffaloes, . . .”¹³¹ In the body of his report, on page 34, Dr. Longley references Mr. Urquhart’s deposition when Mr. Urquhart describes his preparation “for field deployment” when he filled “the water buffaloes primarily at Hadnot Point locations.”¹³² Dr. Longley uses this testimony to assert that water buffaloes were primarily filled at Hadnot Point. To the extent that Plaintiff deposition testimony is considered a reliable source, Dr. Longley does not include testimony that establishes that water stations or fill points at Camp Lejune were located, as Mr. Urquhart also testified, “throughout Camp Lejeune.” Mr. Urquhart further stated that “wherever your closest water site was where you went and got it [the water buffalo] filled.”¹³³ Dr. Longley also chose to not include Mr. McElhiney, Sr.’s testimony about alternative locations to fill water tanks:

Q: And do you know what the water source was for these tanks?

A: Yes.

Q: Can you please tell me?

A: I know of two water points. One was south by Courthouse Bay, and the other one was at the fuel depot in the industrial area.¹³⁴

¹³⁰ Brigham Report, 12/9/2024, 102.

¹³¹ Longley Report, 12/7/2024, 3.

¹³² Longley Report, 12/7/2024, 34.

¹³³ Deposition of Benjamin Urquhart, 11/13/2024, 74:5-10.

¹³⁴ Deposition of Gary McElhiney, Sr., 3/5/2024, 55:15-24. In this section of his report, on page 34, Dr. Longley cites two *Globe* articles. One is dated 6/18/1981, and discusses water purification in the field, “Camp Sweat’ Marines practice field plumbing,” *The Globe*, 6/18/1981, BRIGHAM_USA_0000036590 at *0000036597; and B. Bode, “Field Hygiene, Sanitation in the field takes on many forms,” *The Globe*, 10/15/1987, BRIGHAM_USA_0000029418, at *0000029433. The first of these articles is about a seven-week plumbing and water purification course at Courthouse Bay. The second article discusses field hygiene and a “Reverse Osmosis Water Purification Unit.”, *ibid*. Neither article discusses the filling of water buffaloes.

Dr. Longley treats General Anthony Zinni's deposition testimony in much the same manner. While Dr. Longley cites select passages of General Zinni's testimony to underscore his opinion that Hadnot Point was the only location to fill water buffaloes, he does not include the portions of General Zinni's deposition testimony where he stated that water buffaloes were filled at Camp Geiger or other areas on the base:

Q: Do you know if the Infantry Training Regiment had its own water Buffalos while you were there?

A: Yes. Out of Camp Geiger, we were supported by the regiment and they had their own facilities out there.

Q: Okay. Did those water Buffalos fill up at Hadnot Point or were there fill-up points closer to Camp Geiger?

A: I think there were -- as I remember, there were fill-up points out at Camp Geiger. Pretty self-contained out there.¹³⁵

Further, when asked if it "would it be correct to say that there were multiple places on the Camp Lejeune military installation that had their own water Buffalo fill points," General Zinni answered: "I think. Yes. I think so. I don't think there was any one primary point unless you were main side [sic] and you were supporting the division."¹³⁶

These examples illustrate an issue that I have with Dr. Longley's use of deposition testimony. He relies on select passages from deposition testimony to support his findings without acknowledging testimony that supports alternative findings.

Additionally, Dr. Longley also fails to account for the fact that certain units were not under the operational control of the base commanding general, and thus more likely to fill water buffaloes at outlying areas of the base. On page 34 of his report, Dr. Longley discusses water buffaloes and their field use, citing General Zinni's deposition testimony that the 4th Service Support Group "had responsibility for providing this water."¹³⁷ However, as shown in Image 7, the 2d Force Service Support Group was stationed at Camp Lejeune in support of the 2d Marine Division, both of which were tenant units not under the operational control of the base commanding general. This means, the 2d Marine Aircraft Wing at MCAS New River, as well as the Infantry Training School at Camp Geiger, the Field Medical School and Service Support

¹³⁵ Deposition of Anthony Zinni, 5/28/2024 (Zinni Deposition), 62: 11-22.

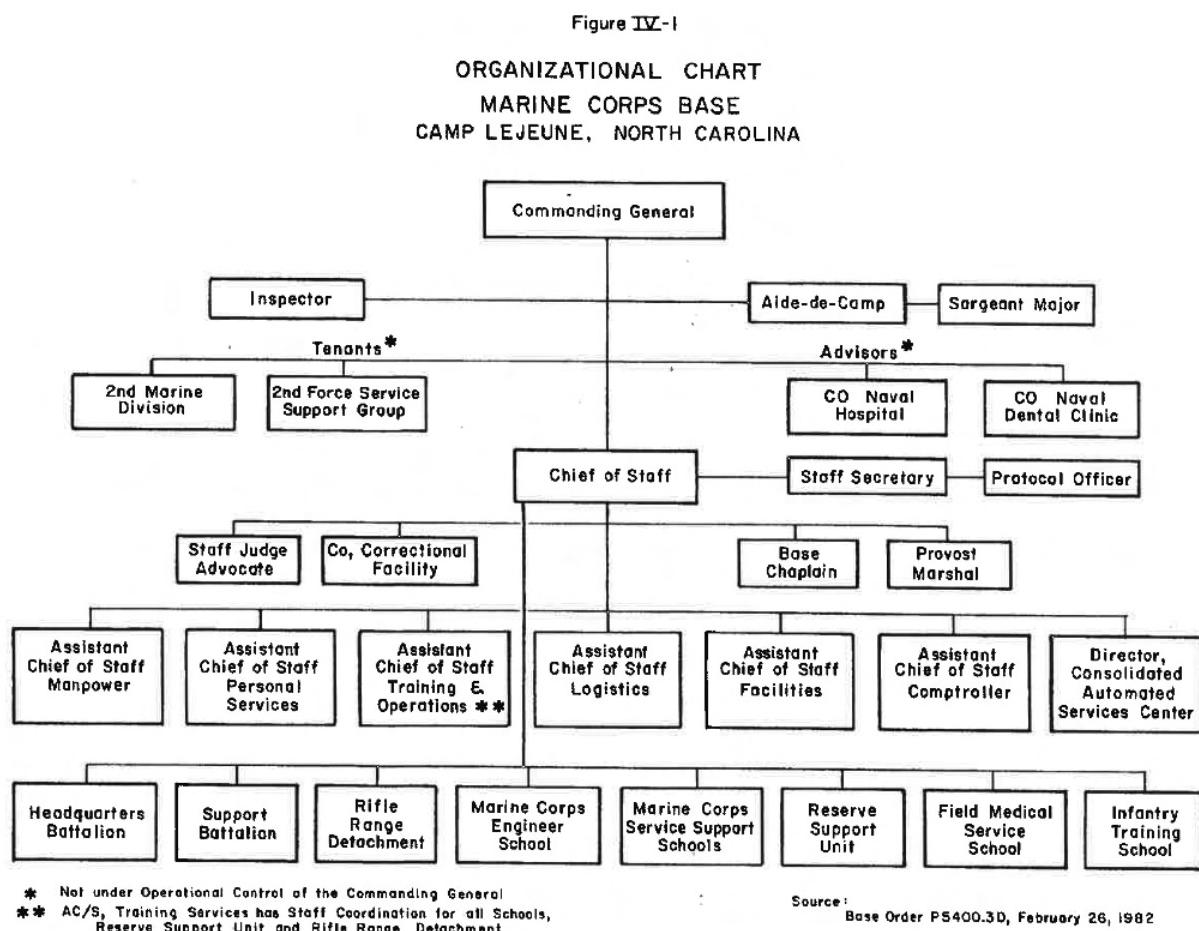
¹³⁶ Zinni Deposition, 5/28/2024, 62:23-63:4. Zinni also testified that he had never seen a water buffalo fill point," ibid, 63.

¹³⁷ Longley Report, 12/7/2024, 34.

School at Camp Johnson, and the Engineer School at Courthouse Bay did not routinely rely on the 2d Force Service Support Group to provide their water buffaloes in support of training.

Image 7 is an organizational chart of the commands at Camp Lejeune introduced as an exhibit during General Zinni's deposition.

Image 7
Organizational Chart, Marine Corps Base Camp Lejeune,
North Carolina, 2/26/1982¹³⁸



The note to the right of the single asterisk at the bottom of the chart reads: "Not under Operational Control of the Commanding General." Missing from the organizational chart is

¹³⁸ Zinni Deposition, 5/28/2024, Exhibit 7, CLJA_WATERMODELING_01-0000323120.

MCAS New River, which was under the command of MCAS Cherry Point. Base Guides from 1966, 1972, 1980, and 1984 all noted the multiple commands at Camp Lejeune.¹³⁹

My discussion in this section of my report is the basis for opinions 1 and 6 of this report regarding Dr. Longley's methodological shortcomings and the discussion of water buffaloes at Camp Lejeune.

IX. Cars at Camp Lejeune

Dr. Longley makes an unsupported conclusion that most Marines lacked cars to travel off base. The second of Dr. Longley's findings reads in part: "A substantial part of the overall demographic historically was composed of young male Marines (under age of 25), and they typically lacked cars during much of the relevant time period."¹⁴⁰ Although I agree with Dr. Longley that young men were likely "a substantial" part of the Camp Lejeune population, I respectfully disagree with his assertion that they lacked cars. Throughout most of the statutory period, the documentation shows there was a considerable number of cars at Camp Lejeune. As I discussed in my December 9, 2024, report, this could also lead one to conclude that more cars would mean more traffic, a point I illustrate in my report through several sources.¹⁴¹

One such source, Image 28 in my December 9, 2024, report is the front page of *The Globe* dated August 10, 1972, and is an illustration of a traffic jam at Camp Lejeune presumably at the main gate. On the guard station are the words: "World's Largest Amphibious Training Base."¹⁴² This illustrates that there was a substantial population that lived off base and commuted onto the base each day, meaning their homes where they cooked, ate, and bathed, were unaffected by contamination. An email from Mike Partain to Dr. Longley corroborates traffic congestion during the morning and evening commutes from people entering and exiting the base.¹⁴³

¹³⁹ 1966 Base Guide, Base_Guides_0000000098, at *0000000103; 1972 Base Guide, Base_Guides_0000000465, at *0000000473; 1980 Base Guide, Base_Guides_0000000829, at *000000833; and 1984 Base Guide, Base_Guides_0000000871, at *000000875-79.

¹⁴⁰ Longley Report, 12/7/2024, 2.

¹⁴¹ Brigham Report, 12/9/2024, 62-63. I discuss in Section VII of this report, that Marines traveled off base into Jacksonville as shown by the Marine Corps' listing off-limits establishments in *The Globe* and off-base advertising in base guide yellow pages.

¹⁴² Brigham Report, 12/9/2024, 63.

¹⁴³ E-mail, M. Partain to K. Longley and J. Ensminger, 1/14/2025, CL_PLG-EXPERT_LONGLEY_0000000011.

In this section of my December 9, 2024, report, I also discussed long travel times on base between Hadnot Point and Montford Point / Camp Johnson in 1970 and between Hadnot Point and Montford Point, Camp Geiger, and MCAS New River in 1986.¹⁴⁴ To further illustrate the prevalence of cars on base during the statutory time period, I use other corroborating sources. For example, *Globe* articles reported on cars, including car accidents. An April 1954 *Globe* article discussed five automobile accidents at Camp Lejeune since the start of the year. The author of the article stated that there were more than 26,000 government and privately-owned vehicles on the base.”¹⁴⁵ Although the 1954 article did not distinguish between privately-owned and government-owned vehicles, an October 1961 *Globe* article did make that distinction stating that there were 22,000 “privately owned vehicles registered at Camp Lejeune.”¹⁴⁶ The following June a *Globe* article stated that there were more than 20,000 privately owned cars at Camp Lejeune and the Corps did not restrict “Marines or workers” from bringing cars on base.¹⁴⁷ The 1962 base guide contained information on where Marines reporting to Camp Lejeune could obtain base auto tags.¹⁴⁸

In his second finding, Dr. Longley states that Marines either walked or used the base’s bus system to get from one place to another and he included in his report a copy of the bus schedule published in *The Globe* in July 1970.¹⁴⁹ However, a February 1966 article from *The Globe* discussing traffic and parking problems at Camp Lejeune stated:

¹⁴⁴ Brigham Report, 12/9/2024, 62-63.

¹⁴⁵ E. Dansker, “Conduct Traffic Study Here to Determine Danger Spots,” *The Globe*, 4/8/1954, BRIGHAM_USA_0000013970, and at *0000013976.

I am not suggesting that all of the privately-owned cars on base belonged to Marines who lived on base. Any discussion of the number of cars on base or the number of parking permits or tags issued must include a recognition that Marines who lived off base and civilians who lived on or off base and drove automobiles on the base needed a base-issued parking permit or tag.

¹⁴⁶ “Slow Drivers Must Observe Speed Limits,” *The Globe*, 10/12/1961, BRIGHAM_USA_0000018652, at *0000018655.

¹⁴⁷ “Parking Space At A Premium Here At Base,” *The Globe*, 6/21/1962, BRIGHAM_USA_0000020751, at *0000020754. An October 1964 *Globe* article placed the number of privately owned vehicles at more than 21,000, see “Office of Law and Order, Base Provost Marshall Section,” *The Globe*, 10/15/1964, BRIGHAM_USA_0000022587, at *0000022598.

¹⁴⁸ 1962 Base Guide, at Base_Guides_000000077, at *000000080. The 1952 Base Guide, before the statutory period, also contained information on driver permits, automobile inspections, insurance, ownership, and traffic regulations, see 1952 Base Guide, Base_Guides_000000058, at *0000000068.

¹⁴⁹ Longley Report, 12/7/2024, 2, 16.

One of the primary causes for traffic and parking congestion is the lack of the use of car pools, and personnel driving their cars to places they could reach within five minutes walking time.

Bus service is available to a number of locations in the Hadnot Point area which could alleviate the necessity of using privately owned vehicles to and from work.¹⁵⁰

In March 1972, four months before the bus schedule appeared in *The Globe*, the writer of an article stated there were: "38,000 privately owned vehicles at Camp Lejeune [that caused] a great deal of congestion, especially between the PX and traffic circle."¹⁵¹ A year later a reported 40,000, or perhaps 50,000 cars were registered at Camp Lejeune.¹⁵²

Moving on to 1981, a *Globe* article reported about 39,800 privately owned vehicles entered Camp Lejeune through the main gate.¹⁵³ Six years later, near the end of the statutory period, the base commanding general asked for assistance from the area commanders to help

¹⁵⁰ "Traffic, parking problems here," *The Globe*, 2/24/1966, BRIGHAM_USA_0000021050, at *0000021054.

¹⁵¹ G. Clock, "Crossing Holcomb tricky," *The Globe*, 3/9/1972, BRIGHAM_USA_0000024840, at *0000024843.

¹⁵² "Decals Of A Different Color," *The Globe*, 3/29/1973, BRIGHAM_USA_0000023583, at *0000023586. The text of the article reads: "More than 10,000 vehicles registered here within the past s[illegible] months already have the new decals, but do not have the expi[illegible] dates flanking the stickers. While 40,000 other motorists are gettin[g] entire works slapped on their bumpers, the 'dateless' stickers [illegible] applied for motorists without them." As noted above, the 1962 base guide contained information on car registrations for Marines reporting to Camp Lejeune. The 1966, 1967, 1970, 1971, 1972, 1976, 1977, 1978, 1979, 1980, and the 1984 Camp Lejeune base guides all contain car registration information as does the 1970 MCAS New River Base Guide, see, 1966 Base Guide, Base_Guides_000000098, at *0000000121-22; 1967 Base Guide, Base_Guides_0000000180, at *000000203; 1970 Base Guide, Base_Guides_0000000254, at *000000275; 1970 Base Guide, New River Marine Corps Air Station, Base_Guides_0000000328, at *000000339; 1971 Base Guide, Base_Guides_0000000391, at *000000423; 1972 Base Guide, Base_Guides_0000000465, at *0000000482-83; 1976 Base Guide, Base_Guides_0000000559, at *000000577; 1977 Base Guide, Base_Guides_0000000627, at *000000635; 1978 Base Guide, Base_Guides_0000000695, at *000000703; 1979 Base Guide, Base_Guides_0000000759, at *000000767; 1980 Base Guide, Base_Guides_0000000829, at *000000837; and 1984 Base Guide, Base_Guides_0000000871, at *000000884.

¹⁵³ D. Luttenberger, "PMO cracks down on vehicle violations," *The Globe*, 7/23/1981, BRIGHAM_USA_0000036996, at *0000023586. This number likely does not include Marines and Marine families that lived on base, and it would double any vehicle that entered the base twice on a given day.

enforce parking regulations. The author of the article reported that illegally parked cars were “a significant problem” at Camp Lejeune.¹⁵⁴

My discussion in this section of my report is the basis for opinion 6 of this report, regarding Dr. Longley’s mischaracterization of modes of transportation on the base.

X. Conclusion

In this report I have detailed my criticism of Dr. Longley’s Expert Report dated December 7, 2024. As reflected in my opinions, my critique centers around Dr. Longley’s methodological shortcomings; his failure to consider areas of Camp Lejeune beyond Hadnot Point and Tarawa Terrace, including his narrow focus on only the two WTPs that pumped contaminated water; his incomplete discussion of water buffaloes; and his incorrect claims that Marines rarely left Camp Lejeune and very few Marines owned cars.

Regarding methodological shortcomings, there are numerous examples throughout his report in which Dr. Longley failed to provide citations for facts and the associated assertions. Other times he provided incomplete citations, such as citing *The Globe* without providing the article’s complete publication date, title, or page reference. Dr. Longley’s report also suffers from incorrect and misleading interpretations of film and photographic sources. Most egregiously, this includes his description of and citation to the image depicting President Nixon’s “visit to Camp Lejeune on October 30, 1971” that never occurred; a misrepresentation of the image of “Marines” filling a “water buffalo at Hadnot Point,” which was actually a photograph of New Jersey National Guardsmen filling a water buffalo in 2012; and his inaccurate caption of the Holcomb Boulevard WTP photograph. Other methodological issues with Dr. Longley’s report include a lack of corroborating material and use of a single document referencing a specific point in time to extrapolate and characterize events or experiences that occurred over the course of decades.

As I discussed in my December 9, 2024, report, Camp Lejeune was much more than Hadnot Point and Tarawa Terrace. As I have noted in this report, there is no doubt that Hadnot Point was the area of Camp Lejeune where many things occurred, but it was not the only area of the base where important activities took place. Many a Marine, for example, passed through the Infantry Training Regiment at Camp Geiger while others received training in their military occupational specialty at Montford Point / Camp Johnson or Courthouse Bay. Marines received rifle certification at the Rifle Range and participated in amphibious landing training at Onslow Beach. MCAS New River, although a part of Camp Lejeune, was under separate command. These areas were not adjacent to Hadnot Point and most had necessary amenities and services, negating the need for daily or frequent trips to Hadnot Point. These were the areas that surrounded the “county seat” or the suburbs of the urban center at Hadnot Point.

¹⁵⁴ “Traffic conditions,” *The Globe*, 5/7/1987, BRIGHAM_USA_0000029212, at *0000029214.

Montford Point / Camp Johnson, Camp Geiger, MCAS New River, Courthouse Bay, Rifle Range, and Onslow Beach all received non-contaminated water from their own WTPs or shared a WTP with another Non-Contaminated Area. Dr. Longley fails to acknowledge that fact. Dr. Longley also fails to address that after the Holcomb Boulevard WTP came online in 1972, it rarely pumped contaminated water and, when it did, the water came from the Hadnot Point WTP. Indeed, many family housing areas did not receive contaminated water and many of the activities of daily living that Dr. Longley discusses in his report—such as children attending school and people swimming in pools—took place in Non-Contaminated Areas of the base.

When discussing the filling of water buffaloes, Dr. Longley does not discuss the possibility that they could have been filled at areas of Camp Lejeune beyond Hadnot Point. Although he cites deposition testimony throughout his report, he does not discuss that some of the cited deponents stated that other filling stations existed at Camp Lejeune in Non-Contaminated Areas.

Two related topics of his report concern the assertion that Marines infrequently left Camp Lejeune and that few had cars that would have allowed such mobility. However, as I point out, in the back of most base guides were pages of advertisements from Jacksonville business owners. The off-limit business establishments posted by Marine Corps leadership is further evidence that Marines could and did leave the base. Furthermore, there was a substantial number of Marines that lived off base throughout the statutory period. And, as I have explained, the number of privately-owned cars on base often exceeded 20,000.

Overall, because Dr. Longley does not consistently adhere to accepted practices that historians employ, his report reflects an incomplete, inaccurate, and at times outright misleading exposition on Camp Lejeune during the statutory period. For the reasons discussed throughout this report and summarized in this conclusion section, I stand by the opinions expressed in my December 9, 2024, report.